Notice of Allowability	Application No.	Applicant(s)	
	10/010,663	ANAND ET AL.	
	Examiner	Art Unit	
	Dung V Nguyen	3723	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *Amendment filed on 19 April 2004 and interview on 29 July 2004*.

2. ☒ The allowed claim(s) is/are *2-13,15-26,28-39 and 41-52*.

3. ☒ The drawings filed on *06 May 2003* are accepted by the Examiner.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

Dung Van Nguyen

DUNG VAN NGUYEN
PRIMARY EXAMINER

Examiner's Amendment

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

2. Authorization for this examiner's amendment was given in a telephone interview with Mr. Larry Guffey on 29 July 2004.

3. The application has been amended as follows:

In the claims:

Cancel claim 14.

Replace claims 15-26 as follows:

15. A method for reducing erosion on the inner wall of said mixing tube as recited in claim 17, wherein the smallest cross sectional dimension of the passage connecting said mixing tube inlet and outlet ports is in the range of 50-3,000 microns.

16. A method for reducing erosion on the inner wall of said mixing tube as recited in claim 17, wherein said abrasive particles have an average diameter of less than half of the smallest cross sectional dimension of the passage connecting said mixing tube inlet and outlet ports.

17. A method for reducing erosion on the inner wall of a cutting jet, mixing tube due to a fluid jet with entrained abrasive particles flowing from said tube's inlet port, along said tube's wall and exiting through said tube's outlet port, said method comprises the steps of:

forming said mixing tube so that at least a portion of its wall is porous,

surrounding at least a portion of the outer wall of said mixing tube wall with a lubricating fluid reservoir,

forcing lubricating fluid to pass from said lubricating reservoir and through said porous wall to form a lubricating film between said mixing tube wall and said flow of abrasive fluid, wherein said lubricating fluid having a kinematic viscosity whose ratio with the kinematic viscosity of said jet's carrier fluid is in the range of 100/1 - 40,000/1.

18. A method for reducing erosion on the inner wall of said mixing tube as recited in claim 17, wherein said lubricating fluid has a flow rate whose ratio with the flow rate of the fluid jet and entrained abrasives is in the range of 1/10,000 - 1/20.

19. A method for reducing erosion on the inner wall of said mixing tube as recited in claim 17, wherein the thickness of said mixing tube wall is varied along its length to control the flow rate of the lubricating fluid.

20. A method for reducing erosion on the inner wall of said mixing tube as recited in claim 17, wherein said mixing tube wall has variable porosity along its length to control the flow rate of said lubricating fluid.

21. A method for reducing erosion on the inner wall of said mixing tube as recited in claim 17, wherein said porous mixing tube being fabricated from a porous ceramic material.

22. A method for reducing erosion on the inner wall of said mixing tube as recited in claim 21, wherein the mixing tube passage connecting its inlet and

outlet ports is made by a process selected from the group consisting of casting, molding and machining processes for said porous ceramic material.

23. A method for reducing erosion on the inner wall of said mixing tube as recited in claim 17, wherein said porous mixing tube being fabricated from a porous metal.

24. A method for reducing erosion on the inner wall of said mixing tube as recited in claim 23, wherein the mixing tube passage connecting its inlet and outlet ports is made by a process selected from the group consisting of casting, molding and machining processes for said porous metal.

25. A method for reducing erosion on the inner wall of said mixing tube as recited in claim 17, wherein said porous mixing tube being fabricated from a gravity sintered, porous material.

26. A method for reducing erosion on the inner wall of said mixing tube as recited in claim 25 wherein the mixing tube passage connecting its inlet and outlet ports is made by using electric discharge machining to machine said porous material, and wherein the porous material for use in fabricating said mixing tube and the operating parameters for said electric discharge machining of said mixing tube passage are chosen so as to yield minimum blocking of the pores on the machined surface of said mixing tube passage.

Reasons for Allowance

4. The following is an examiner's statement of reasons for allowance: prior art of record considered as a whole alone or in combination neither anticipates nor renders obvious, the lubricating fluid having a kinematic viscosity whose ratio

with the kinematic viscosity of the jet's carrier fluid is in the range of 100/1 - 40,000/1, in combination with the rest of the limitations in claims 4, 17, 30, 43.

5. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dung V Nguyen whose telephone number is 703-305-0036. The examiner can normally be reached on M-F, 6:30-3:00.

7. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph J Hail can be reached on 703-308-2687. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

8. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DVN
July 29, 2004

Dung van Nguyen

DUNG VAN NGUYEN
PRIMARY EXAMINER